

Notice of Allowability

Application No.

09/932,579

Applicant(s)

CHEN ET AL.

Examiner

Art Unit

Jean M. Corrielus

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to AMENDMENT FINED ON 10/23/07.
2. ☒ The allowed claim(s) is/are 30-61 RENUMBERED AS 1-32.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Jean M. Corrielus
Primary Examiner
2162

DETAILED ACTION

1. This office action is in response to the amendment filed on October 23, 2006, in which claims 1-29 have canceled and claims 30-61 are added for examination.

2. The rejection under 112, 101 and 102 set forth in the last office action has been withdrawn.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jordan M. Bercker (Reg. No. 39,602 on January 22, 2007).

The application has been amended as follows:

In the specification:

In page 11, line 17 after "Dynamic Data Space" please insert, now US Patent 6,728,922.

In page 11, line 21 after "Instant Snapshot", please insert now US Patent 7,072,916.

In page 12, line 4 after "Improved Space Allocation in a Write Anywhere File System", please insert now US Patent 6,636,879.

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In page 12, line 11 after "persistent and reliable Delivery of Event Messages," please insert now US Patent 6,910,154.

In the Claim:

Please replace the following:

30. (Currently amended) A method comprising:

maintaining in a computer system a file system that includes a live filesystem accessible to users and a zombie filesystem not accessible to users;

in response to a request to delete at least a portion of a file stored in the live filesystem, moving blocks storing said portion of the file from the live filesystem to the zombie filesystem and deleting at least some of the blocks from the zombie filesystem before a scheduled consistency checkpoint of the file system;

recording said moving and deleting in a persistent memory; and

in response to a service interruption in the computer system ~~crash of the file system,~~
recovering the file system in the computer system by replaying said moving and deleting based on information stored in the persistent memory ~~to recover the file system.~~

41. (Currently amended) A method comprising:

maintaining in a computer system a file system that includes a live filesystem accessible to users and a zombie filesystem not accessible to users;

in response to a request to delete a file having attached data elements from the live filesystem, moving blocks storing the file and the attached data elements from the live filesystem to

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the zombie filesystem, and deleting at least some of the blocks from the zombie filesystem before a scheduled consistency checkpoint of the file system;

recording said moving and deleting in a persistent memory; and

in response to a service interruption in the computer system ~~crash of the file system~~,
recovering the file system in the computer system by replaying said moving and deleting based
on information stored in the persistent memory ~~to recover the file system~~.

44. (Currently amended) A machine-readable medium having instructions, when executed by a processor in a machine, cause a the machine to perform a method, the method comprising:

maintaining in a computer system a file system that includes a live filesystem accessible to users and a zombie filesystem not accessible to users;

in response to a request to delete a file from the live filesystem, moving blocks storing the file from the live filesystem to the zombie filesystem and deleting at least some of the blocks from the zombie filesystem before a scheduled consistency checkpoint of the file system;

recording said moving and deleting in a persistent memory; and

in response to a service interruption in the computer system ~~crash of the file system~~,
recovering the file system in the computer system by replaying said moving and deleting based
on information stored in the persistent memory ~~to recover the file system~~.

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49. (Currently amended) A machine-readable medium having instructions, when executed by a processor in a machine, cause a the machine to perform a method, the method comprising:

maintaining in a computer system a file system that includes a live filesystem accessible to users and a zombie filesystem not accessible to users;

in response to a request to truncate a file stored in the live filesystem, moving blocks storing a portion of the file to be truncated from the live filesystem to the zombie filesystem and deleting at least some of the blocks from the zombie filesystem before a scheduled consistency checkpoint of the file system;

recording changes of the live filesystem and the zombie filesystem caused by said moving and deleting in a persistent memory; and

in response to a service interruption in the computer system ~~crash of the file system~~, recovering the file system in the computer system by replaying said moving and deleting based on information stored in the persistent memory ~~to recover the file system~~.

54. (Currently amended) A storage server comprising:

a processor;

a network interface through which to communicate with a client;

a storage interface through which to access a plurality of mass storage devices on behalf of the client; and

a memory coupled to the processor, the memory storing instructions which, when executed by the processor, cause the storage server to perform a process comprising:

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maintaining in a computer system a file system that includes a live filespace accessible to the client and a zombie filespace not accessible to the client;

in response to a request to delete at least a portion of a file stored in the live filespace, moving blocks storing said portion of the file from the live filespace to the zombie filespace and deleting at least some of the blocks from the zombie filespace before a scheduled consistency checkpoint of the file system;

recording said moving and deleting in a persistent memory; and

in response to a service interruption in the computer system ~~crash of the file system~~, recovering the file system in the computer system by replaying said moving and deleting based on information stored in the persistent memory ~~to recover the file system~~.

Allowable Subject Matter

4. Claims 30-61 are allowable in light of the prior art and in light of the Applicant's arguments.

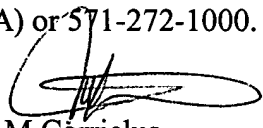
Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean M. Corrielus whose telephone number is (571) 272-4032. The examiner can normally be reached on 10 hours shift.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jean M Corrielus
Primary Examiner
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January 22, 2007